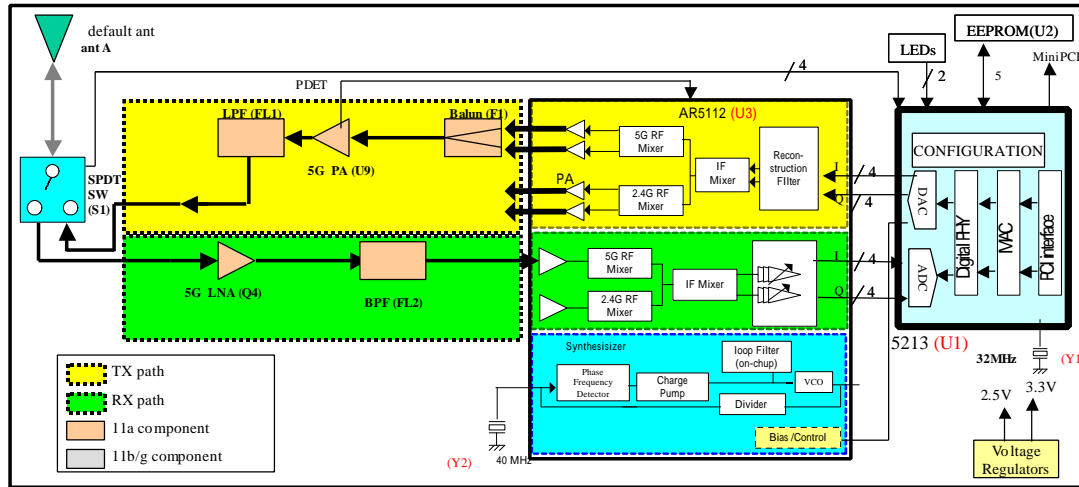# XA-622H

Circuit Description

XA-622H block diagram

Key Component Description

MAC & BBP   U1   AR5213

The AR5213 integrates multi protocol media access control(MAC), a baseband processor, a PCI/CardBus host interface, and ADC/DAC converters. The AR5213 implements half-duplex OFDM,CCK and DSSS baseband processing support in all IEEE 802.11a, 802.11b,and 802.11g data rate.

Dual-Band RF-Chip   U3   AR5112

The AR5112 is part of the two-chip solution for dual-band, multi-mode, IEEE802.11a/b/g(5/2.4 GHz)wireless local area networks(WLANs). The AR5112 can operate in either the 2.4GHz or 5GHz band. The transmitter combines baseband in-phase (I) and quadrature (Q) signal, up-converts them to the desired frequency channel, and drives the RF signal off-chip through the integrated power amplifier, and no external VCOs and SAW filter needed.

Crystal Y2 40MHz

Provide a reference source for synthesizer and purpose of AR5213 system clock.

4.9~5.85GHz Power Amplifier U9 RMPA5251

The RMPA5251 power amplifier is designed for high performance WLAN applications in 4.9 to 5.35 and 5.15 to 5.85 GHz frequency bands. It have 27dB gain, and P1dB = 26dBm, EVM is 2% increase above system level at 18 dBm.

RF Switch S1 SPDT HWS382

The HWS382 is a GaAs PHEMT MMIC SPDT switch operating at DC~6GHz, can be used IEEE 802.11a\b\g WLAN PC card and access point applications as transmit/receive switch, antenna diversity switch, or band-selection switch.

EEPROM U2 AT93C86

AT93C86 store some necessary information, like the CIS, calibrated data and MAC data.

SWITCH REGULATOR   VR2   LTC3406ES5

Supply 3.3V to switch 2.5V voltage.
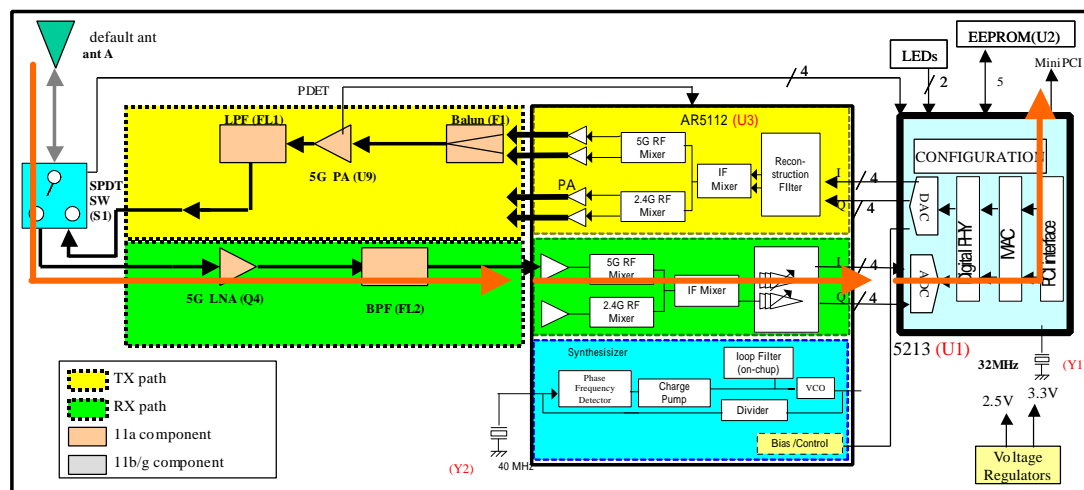
REGULATOR   VR1   RT9167-18PB

Supply 2.5V to switch 1.8V voltage.

Step-up Converter U8 MPS1527

Supply RMPA5251 VC1, VC2, and VC3 voltage.

Receive Signal Flow

XA-622H block diagram

default ant
ant A

EEPROM(U2)

LEDs / 2

MiniPCI

5

PDET

LPF (FL1)   Balun (FL)   AR5112 (U3)

5G RF Mixer

IF Mixer

Recon-struction Filter

CONFIGURATION

/ 4

I / 4
Q / 4

DAC

5G PA (U9)

SPDT SW (S1)

PA

2.4G RF Mixer

digiPHY MAC PCI update

5G LNA (Q4)   BPF (FL2)

5G RF Mixer

IF Mixer

2.4G RF Mixer

I / 4
Q / 4

ADC

5213 (U1)

32MHz   (Y1)

Synthesizer

loop Filter (on-chip)

Phase Frequency Detector   Charge Pump   VCO

Divider

Bias /Control

2.5V   3.3V

Voltage Regulators

(Y2) 40MHz

TX path
RX path
11a component
11b/g component

1. The signal is received by the default antenna
2. Received signal passes through receiving path of T/R switch
3. Signal passes to LNA for front-end signal amplification, and then passes to Band-Pass Filter.
4. Signal passes to 5GRF Mixer and VCO control to contrast.
5. Then the signal will be the I/Q balanced amplitude kept to get best A/D performance passes to AR5213.
6. AR5213 demodulates the data from I/Q signals to packet-form information, and passes the data to host MiniPCI interface

Transmit Signal Flow

XA-622H block diagram
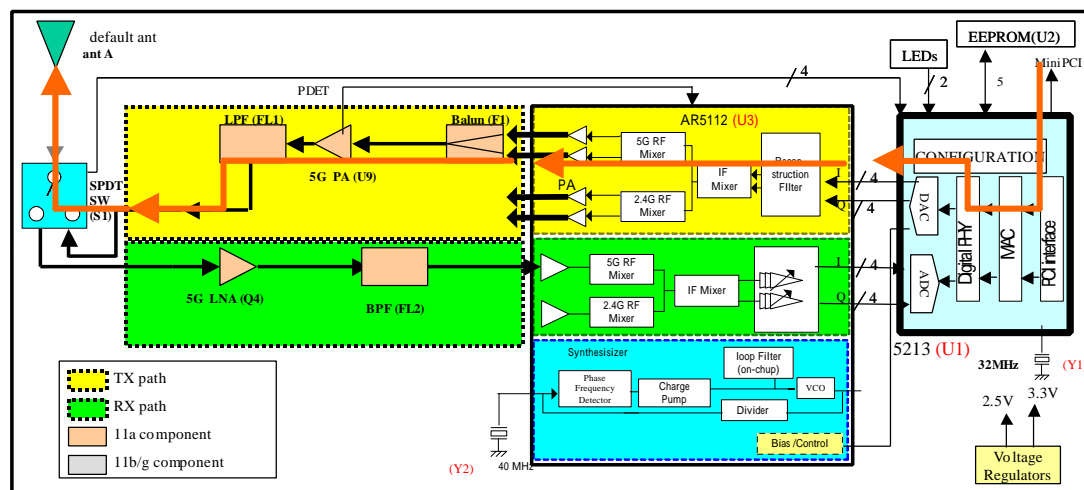
1. Data from the host computer is sent to the MAC (AR5213) through the MiniPCI interface.
2. AR5213 packetizes to compliant with 802.11a and translates into OFDM I/Q signal by different rate 6, 9, 12, 18, 24,36, 48, 54Mbps.
3. AR5112 up-convert the I/Q to RF 5.0 GHz and a variable gain block amplifies the RF signal by TX close-loop control
4. AR5112 kept to get best D/A ,then passes to Balun and then transform 50ohm to 100ohm balanced signal to PA for last stage power boost.
5. After the power amplified, a LPF rejects the harmonics and spurious.
6. Through the default antenna, the contented signal radiates to the air.

Features of Equipment under Test

Items	Description
Type of Modulation	OFDM (16QAM / 64QAM / DQPSK / DBPSK)
Number of Channels	5
Frequency Band	5725 MHz ~ 5850 MHz
Carrier Frequency	**5745-5825 MHz**
Data Rate	OFDM : 6, 12, 18, 24, 36, 48, 54Mbps
Max. Conducted Output Power	22.76dBm
Antenna Type	**Dipole Antenna**
Communication Type	Half-Duplex
Testing Duty Cycle	100.00%
Power Rating (DC/AC, Voltage)	3.3 VDC from Host
Test Power Source	120.00V AC (Host)
Temperature Range (Operating)	0 ~ 55 °C